



Contribution ID: 53

Type: **Poster plus Minioral**

Analysis of the portability of a testing exchangeability using a randomized power martingale algorithm in FPGA-based devices

Event detection in fusion experiments is essential for plasma control during discharges and requires fast data acquisition and processing to meet real-time constraints, which demands the implementation of FPGA-based data acquisition and detection systems. The randomized power martingale RPM algorithm deals with the changing nature of a multidimensional dataset, detecting changes in the data distribution. This work presents the implementation using the OpenCL language of such an algorithm in two FPGA-based devices and the performance obtained. The development and tests have been done in a Micro Telecommunications Computing Architecture (MTCA) platform using two Advanced Mezzanine Cards boards, including an ARRIA10 device from INTELfpga and a ZynqMP from XILINX respectively. The contribution details: the development cycle followed to do the implementation, the optimization techniques used and the performance obtained, and the conclusions about the portability of the solution achieved. It is worthy that some details about the comparison between OpenCL and HLS are also provided.

Minioral

Yes

IEEE Member

Yes

Are you a student?

No

Authors: CARPEÑO, Antonio (Universidad Politécnica de Madrid); NOT SUPPLIED, MARIANO RUIZ GONZALEZ; COSTA, Victor (Universidad Politecnia de Madrid); RIVILLA, Daniel (Universidad Politécnica de Madrid); VEGA, JESUS (CIEMAT); COSTA, Víctor (Universidad Politécnica de Madrid)

Presenters: COSTA, Victor (Universidad Politecnia de Madrid); COSTA, Víctor (Universidad Politécnica de Madrid)

Session Classification: Mini Oral - II

Track Classification: Real Time System Architectures and Intelligent Signal Processing